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The Effects of Contact on Sexual Prejudice: A Meta-Analysis

Sara J. Smith · Amber M. Axelton · Donald A. Saucier

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Abstract A meta-analysis was conducted to examine the relationship between contact and sexual prejudice. A quantitative synthesis with 83 effect sizes from 41 articles, using mostly samples from the United States, showed a significant negative relationship between contact and sexual prejudice. Among six possible moderators tested (type of sexual prejudice scale used, correlational versus experimental studies, attitudes toward lesbians versus gay men, publication year, quality of study, and where study was conducted), three were shown to significantly moderate the relationship between contact and sexual prejudice. The relationship between contact and sexual prejudice varied as a function of the type of sexual prejudice measure used, the target group toward which the prejudicial attitudes were assessed, and where the study was conducted.

Keywords Meta-analysis · Intergroup contact · Gay · Lesbian · Sexual prejudice

Introduction

The purpose of the current study was to examine the relationship between contact and sexual prejudice toward homosexuals and factors that may moderate this relationship. These include the specific sexual prejudice measure used in the study, whether the study was correlational or experimental, participants' attitudes toward lesbians versus gay men after having contact with homosexuals, year of

publication, the quality of the study and whether the study was conducted in the United States. Using meta-analytic procedures this study synthesized the relevant literature to obtain an overall effect size of the relationship between contact and sexual prejudice as well as other factors that may moderate this relationship.

The out-group homogeneity hypothesis (Linville and Jones 1980) and Allport's (1954) contact hypothesis are two theories that emphasize the importance of intergroup contact. According to the out-group homogeneity hypothesis people tend to automatically associate more positive characteristics to their in-group while associating more negative characteristics to the out-group (Dás Gupta 2004). However, according to the contact hypothesis, intergroup contact may help reduce this automatic bias by reducing negative attitudes towards the out-group (Allport 1954). One minority group that is a target of this automatic bias is homosexuals.

Sexual prejudice against gay men and lesbians is still widely prevalent. Gay men and lesbians have faced widespread discrimination on the basis of their sexual orientation in a broad spectrum of areas including fair access to employment, housing, and medical care. In the United States, legislation was proposed in 2003 to amend the U.S. Constitution that would define marriage only as a union between a man and a woman, and would also prevent legislatures and courts from mandating more limited benefits, such as civil unions or domestic partnerships for same sex couples (National Gay and Lesbian Task Force 2005). In Russia no legislation has been enacted to protect homosexuals who are targets of discrimination or harassment. Further, in countries such as Poland and Bolivia, there has been a constitutional ban on same-sex marriage. Despite these instances of discrimination, however, support for civil rights and nondiscrimination laws have improved.

S. J. Smith (✉) · A. M. Axelton · D. A. Saucier
Department of Psychology, Kansas State University,
499 Bluemont Hall,
Manhattan, KS 66506, USA
e-mail: sjs6655@ksu.edu

In 2000, Vermont became the first state in the U.S. to recognize civil unions between homosexual couples (Saucier and Cawman 2004), followed by Connecticut and New Jersey. Gay marriage has also become legal in Massachusetts, along with countries such as Belgium, the Netherlands, and Canada. However, it should be noted that these decisions are highly controversial and not universally supported. This was seen in California when the recognition of same sex marriages was overturned during the 2008 election. California voted yes on proposition eight that changed the state Constitution to restrict the definition of marriage to opposite-sex couples. Thus despite, and possibly because of, attempts to advance the status of gay men and lesbians, sexual prejudice still exists.

Research on homosexuality has revealed a number of factors associated with sexual prejudice. Individuals who show higher levels of sexual prejudice are typically male (Herek 1991, 1994; Kite 1984; Kite and Whitley 1996), have more traditional gender-role attitudes (Stark 1991; Whitley and Áegisdóttir 2000), and are more religious (Shulte and Battle 2004; Wilkinson 2004). Further, a meta-analysis conducted by Whitley and Lee (2000) revealed that right-wing authoritarianism, social dominance orientation, dogmatism, and political conservatism were all associated with greater levels of sexual prejudice towards homosexuals. However in contrast, one factor that has been associated with less negative attitudes toward homosexuals and minority groups is contact (Herek and Capitanio 1996).

Sherif's (1956) seminal study revealed how factors such as positive contact and superordinate goals could produce better intergroup relations. This study took place at an isolated summer camp with eleven and twelve-year old boys from homogenous backgrounds. The boys were split into two different groups and over time created bonds within their respective in-group through shared experiences, including a tournament of games in which the two different groups of boys had to work together within their own group but against the other group of boys. After the tournament of games, hostility between the groups increased while solidarity and morale increased within the in-groups. However, when intergroup contact between the boys was necessary in order to complete superordinate goals, such as fixing the breakdown in the camp water supply, the hostility between the two groups began to decrease. Eventually the boys actually sought opportunities to engage and mingle with the other boys who were not originally in their in-groups. This work was a first step in revealing how relations between individuals who belong to different groups can improve when contact occurs.

The contact hypothesis, developed by Allport (1954) in his revolutionary book *The Nature of Prejudice*, states that interaction and quality of contact, specifically positive contact with a member of a negatively stereotyped group,

can lead to more positive attitudes, not only towards that individual, but also towards that individual's group. Allport also specified that contact with outgroup members is especially beneficial when certain factors are present: the individuals have equal status, they share common goals which must be achieved through cooperation, and they have institutional support. However, Pettigrew (1998) has argued that if all of these conditions of contact are necessary for positive effects on prejudice, then positive contact effects would be less common than they are. Many studies subsequent to Allport's discussion of the contact hypothesis have revealed that contact, even when not meeting these optimal conditions, has had positive effects on attitudes toward both minority individuals and minority groups in general (e.g., Gaertner et al. 1990; Hewstone and Brown 1986; Riordan and Ruggiero 1980). The out-group homogeneity hypothesis may help explain why contact reduces prejudice.

According to the out-group homogeneity hypothesis, individuals perceive homogeneity within out-groups (i.e., intragroup similarity), but much more heterogeneity within their in-group (i.e., intragroup differences) (Linville and Jones 1980; Simon and Brown 1987). Studies have also shown that people tend to automatically associate positive characteristics to the group they assign themselves, while at the same time associating negative characteristics to the complementary out-group (Dásgupta 2004). Researchers have found that these processes of categorization and association of characteristics happen as early as age five, such that Aboud (2003) found that children who had the tendency to hold more negative attitudes toward the out-group held more positive attitudes toward their in-group. However, intergroup contact may reduce this bias by reducing negative attitudes and also giving individuals new information that may challenge stereotypes held toward that out-group (Allport 1954).

A previous meta-analysis conducted by Pettigrew and Tropp (2006), using 515 studies and 713 samples found a significant mean effect size ($r = -.21$) for the relationship between contact and prejudice. This suggests that higher levels of intergroup contact are associated with lower levels of prejudice. Pettigrew and Tropp (2006) also tested Allport's contact conditions and found significantly stronger effect sizes for the 134 samples that satisfied Allport's conditions than those that did not. However, the meta-analysis also revealed that these conditions were not necessary for facilitating positive attitudes, as significant but weaker relationships between contact and prejudice were found in studies in which Allport's conditions were not satisfied. Finally, intergroup contact was associated not only with lower levels of prejudice toward specific individuals who belonged to out-groups, but also with more positive attitudes toward their entire out-group and

even toward other out-groups not involved in the contact. One of these other out-groups includes homosexuals.

Herek (1988) has found that contact with individuals known to be homosexual was negatively associated with sexual prejudice. According to Herek, heterosexual individuals who report knowing and interacting with someone who is homosexual generally report more positive attitudes toward this group than do heterosexual individuals who do not have those contact experiences. Further, Herek suggests that individuals with previous positive interactions with homosexuals may generalize those experiences and develop positive attitudes toward the stigmatized group.

The purpose of our study is to further Pettigrew and Tropp's (2006) work on contact by focusing not only on the relationship between contact and sexual prejudice towards homosexuals, but also on other factors that may moderate this relationship which were not addressed by Pettigrew and Tropp (2006). These include the specific sexual prejudice measure used in the study, whether the study was correlational or experimental, participants' attitudes toward lesbians versus gay men after having contact with homosexuals, year of publication, the quality of the study, and whether the study was conducted in the United States. This study will synthesize the relevant literature and address the relationship between contact and sexual prejudice, as well as those factors that may moderate this relationship.

Moderators of Sexual Prejudice

Moderating variables may help to further explain the relationship between contact and sexual prejudice. These moderating variables may be related to how contact influences sexual prejudice. Possible variables that may influence this relationship include the specific sexual prejudice measure used in the study, whether the study was correlational or experimental in nature, participants' attitudes toward lesbians versus gay men after having contact with them, the quality of the study, publication year, and where the study was conducted.

Sexual Prejudice Measures

There are a variety of measures designed to measure sexual prejudice. Herek (1984) developed the Attitudes Toward Lesbians and Gay Men Scale (ATLG) to specifically measure disapproval and (lack of) tolerance towards lesbians and gay men. The twenty item ATLG has two 10-item subscales: Attitudes Toward Lesbians (ATL) and Attitudes Toward Gay Men (ATG) scale. Items included in this measure include: *Sex between two women [men] is wrong, I think homosexuals are disgusting, and A man [woman] who is homosexual is just as likely to be a good person as anyone else.* Although this measure is widely

used in sexual prejudice research, past studies have also made use of other scales. One of these is the Index of Attitudes toward Homosexuality (IAH) which measures the way heterosexuals feel about associating with homosexuals (Hudson and Ricketts 1980). Statements in this measure include: *I would feel nervous being in a group of homosexuals, and I would be upset if I learned that my brother or sister was homosexual.* Lastly, the Homosexuality Attitude Scale (HAS) (Kite and Deaux 1986), statements in this measure include: *I would not mind having homosexual friends, and I see the gay movement as a positive thing.* It is hypothesized that the sexual prejudice measures used in each study will moderate the relationship between contact and sexual prejudice because the different scales may influence the scores of sexual prejudice that are obtained. This influence may be due to the way items about homosexuals are phrased in the different measures.

Experimental Versus Correlational Studies

In addition to the way attitudes toward homosexuals are measured, the way that contact with this group is operationalized differs between studies. The first category of studies consists of experimental studies in which heterosexuals' level of sexual prejudice was assessed subsequent to contact with an actual individual, who is, at least presumably homosexual. The second category consists of correlational studies in which heterosexual participants complete questionnaires to assess their level of contact with homosexuals. Correlational studies are predicted to show a stronger relationship between contact and sexual prejudice because participants are assessing the contact they have had with homosexuals throughout their lifespan. Heterosexual participants completing these measures may have homosexual family members or friends and this could influence how they respond to measures of contact versus those individuals who may have contact with a homosexual for the first time in an experimental study.

Target Group

Research has shown that there are sometimes differences in the extent to which people are prejudiced against gay men versus lesbians. For instance, heterosexual men often hold more negative attitudes toward gay men than toward lesbians, while heterosexual women's attitudes are more similar toward both lesbians and gay men (Herek 1991, 1994; Kite and Whitley 1998). Because of the differences in the prejudice harbored toward gay men and lesbians, we evaluated whether the relationship between contact and sexual prejudice would be influenced by the target group toward which the prejudicial attitudes were assessed. Thus, based on this research we hypothesized that when lesbians

were the target group, there would be a stronger relationship between contact and sexual prejudice than compared to when gay men are the target group. For this study we coded the target group as lesbians, gay men, or homosexuals in general.

Quality of Study

All researchers strive to conduct studies of the highest quality, however, not all studies are conducted at the same level of quality. Higher methodological quality indicates more scientific rigor. Many factors are important in determining the quality of a study (e.g., random assignment, adequate control groups, completeness of methodology). With this variation of quality present in the different studies, it is hypothesized that those studies with higher methodological quality will have more scientific rigor which will produce results with stronger effects than those studies with lower methodological quality. Thus, we expect that the relationship between contact and sexual prejudice will be stronger as the quality of studies increases.

Year of Publication

Starting with the gay rights movement towards the end of the 1960s (Newman 1989) there has been some improvement towards the support for civil rights and nondiscrimination laws, including states passing favorable marriage legislation and legislation prohibiting sexual orientation discrimination in private employment. Homosexual culture is also becoming more prevalent in the United States which means that heterosexual individuals may be having more contact with gay men and lesbians. Accordingly, we evaluated whether publication year influenced the relationship between contact and sexual prejudice.

Where Study Was Conducted

Social attitudes towards lesbians and gay men are changing. In Norway it seems that attitudes toward homosexuals are changing for the better. For example, as cited by Anderssen (2002), a study conducted by Walderhaugh, Wiig, Pedersen, Stavseng, and Holthe-Berg (2000) found that 74% of their sample was ready to accept an openly gay or lesbian bishop. However, while it seems that social attitudes may be changing for the better in some countries, others still hold negative attitudes toward lesbians and gay men. For example, in Turkey, homosexuality by many is perceived as unacceptable and deviant. Further, lesbians and gay men who “come out” publicly can be rejected by their families, fired from their jobs, and can be the target of hostile behavior from society (Yüzgün 1993). Further, in the United States during the 2008 election, California voted

yes on proposition eight that changed the state Constitution to restrict the definition of marriage to opposite-sex couples. This research suggests that views on sexuality differ by country. Thus, we wanted to evaluate whether the country where the study was conducted would influence the relationship between contact and sexual prejudice.

Overview of Hypotheses

We tested seven hypotheses in this meta-analysis. 1) There will be an overall negative relationship between contact and sexual prejudice. 2) The sexual prejudice measure used in the study (e.g., ATLG, IAH) will moderate the relationship between sexual prejudice and contact. 3) Because correlational studies assess contact using survey methods versus experimental studies that assess contact with a homosexual for the first time, there will be a stronger relationship between contact and sexual prejudice when studies are correlational. 4) There are differences in the extent to which individuals are prejudiced against gay men versus lesbians, thus, we hypothesized that when the target group are lesbians, there will be a stronger relationship between contact and sexual prejudice when compared to gay men. 5) We hypothesized that those studies with higher methodological quality will have more scientific rigor which will produce results with stronger effects than those studies with lower methodological quality. Thus, we expect that the relationship between contact and sexual prejudice will be stronger as the quality of studies increases. 6) Although no a priori hypothesis was made, we wanted to evaluate whether publication year would moderate the relationship between contact and sexual prejudice. 7) Finally, no a priori hypothesis was made but we wanted to evaluate whether studies conducted in the United States versus studies conducted outside the United States would moderate the relationship between contact and sexual prejudice.

Method

Studies for this meta-analysis were found using the database PsycINFO. Search terms were entered into the database covering the publication period from 1900 to June 2006. Search terms included: “attitudes toward lesbians and gay men,” “heterosexuals and homophobia,” “heterosexual attitudes toward homosexuality,” “contact and heterosexuals attitudes toward homosexuals,” and “contact and attitudes toward homosexuality.” After initial studies were found, their reference lists were examined to locate more studies. To be included in the meta-analysis, studies had to report statistics sufficient for the calculation of an effect size to assess the relationship between contact and sexual prejudice. Articles included in the analysis could only be in

English and published in psychological journals. In all, 41 studies met the criteria for inclusion in the meta-analysis.

Coder Reliability

All studies were coded by two independent coders. Of the 41 studies included, 35 of the studies were conducted in the U.S. and had a combined total of 10,180 individual participants. Many of these studies did not provide information about participants by gender, thus, not allowing us to further examine the type of participants involved. Six studies were conducted outside the U.S. and had a combined total of 1,996 individual participants with just over 50% of the participants being male. All studies were coded for the type of scale used to measure sexual prejudice, whether the study was experimental or correlational, type of attitudes measured (toward lesbians or gay men), quality of the study, year of publication, and where the study was conducted. The scales used to assess sexual prejudice were coded by having each coder record the sexual prejudice scale used in the method section for each study. After the scales were recorded they were categorized into the most commonly used sexual prejudice scales which included: Herek's (1984) Attitude Toward Lesbians and Gay Men scale, the Index of Attitudes toward Homosexuality scale (IAH) (Hudson and Ricketts 1980), the Homosexuality Attitude Scale (HAS) (Kite and Deaux 1986), and all other scales were coded as "other." Scales were coded as "other" if the investigators in the study created their own scale to assess sexual prejudice, or the scale used in the study is not commonly used scale in the sexual prejudice literature. Coders showed high reliability on the type of scale used to assess sexual prejudice ($kappa=.92$). The type of contact was coded by having the coders put each study into one of two categories. The first category consisted of experimental studies in which heterosexuals' level of sexual prejudice was assessed after having contact with an actual individual who was a homosexual. The second category consisted of correlational studies in which heterosexual participants were asked to complete questionnaires to examine their level of contact with homosexuals. The raters' codings for correlational versus experimental studies showed perfect reliability ($kappa=1.0$). The target group measured was coded by having the coders put the target group into one of three categories. The first category was the target group lesbians. The second category was the target group gay men, and the third category was the target group of homosexuals in general. The raters' codings for target group showed perfect reliability ($kappa=1.0$). For ratings of study quality, coders used a Likert-type rating from 1 (*low*- inadequate control groups, nonrandom assignment, etc.) to 9 (*high*- adequate control groups, random assignment, etc.). Study quality ratings showed

good reliability (mean $r=.86$, Spearman Brown effective reliability $R=.92$). Publication years were coded by having each judge record the publication year for each study. Publication year showed perfect reliability (mean $r=1.0$, Spearman Brown effective reliability $R=1.0$). Finally where the study was conducted was coded by having each judge put the study into one of two different categories. The first category was for studies conducted within the United States, while the second category consisted of studies conducted outside the United States. The rater's codings for where the study was conducted showed perfect reliability ($kappa=1.0$).

Calculation of Effect Sizes

The correlation coefficient (r) was used as the effect size for the relationship between contact and sexual prejudice. Studies that reported mean differences (i.e., t , F , M , SD) were also calculated as r for the purposes of this meta-analysis. Negative effect sizes indicated that as contact increased, sexual prejudice decreased. Positive effect sizes indicated that as contact increased, sexual prejudice increased. Effect sizes for each study were calculated using the statistical program DSTAT (Johnson 1993). This program was used because it was designed for the specific purpose of meta-analysis calculations. In all, 83 effect sizes were extracted from the 41 studies. The effect sizes calculated for the relationship between contact and sexual prejudice that were extracted from each study are listed in Table 1.

Results

Table 2 shows the distribution of the effect sizes which revealed a relatively normal distribution. It was hypothesized that there would be an overall negative relationship between contact and sexual prejudice. The overall effect size for the 83 hypothesis tests was significant, $r=-.26$, $p<.0001$. This effect size indicates that there was an overall negative relationship between contact and sexual prejudice, indicating that as contact with homosexuals increased, sexual prejudice decreased. Further, the test for overall homogeneity was significant, $Q(w)=811.374$, $p<.0001$, suggesting that there is variability in the overall relationship between contact and sexual prejudice, and that this variability potentially could be explained by moderators. Some studies contributed more than one effect size which introduced a possible problem of non-independence. To address this, one overall effect size estimate was calculated for each study to determine if the overall effect size for the relationship between contact and sexual prejudice would change when each study was allowed to contribute only one effect size. Results were consistent with the results when all

Table 1 Effect size estimates for all hypothesis tests contributing to the overall effect size estimate.

Author	Year	<i>d</i>	<i>n</i>	CI Lower	CI Upper	<i>r</i>	<i>p</i>
Anderssen (men baseline)	2002	-.4715	293	-.64	-.31	-.2300	<.0001
Attitudes toward lesbians							
Anderssen (men baseline)	2002	-.3233	293	-.49	-.16	-.1600	.0001
Attitudes toward lesbians							
Anderssen (women baseline)	2002	-.5152	322	-.67	-.36	-.2500	<.0001
Attitudes toward lesbians							
Anderssen (women baseline)	2002	-.5152	322	-.67	-.36	-.2500	<.0001
Attitudes toward lesbians							
Anderssen (men year-two)	2002	-.3859	264	-.56	-.21	-.1900	<.0001
Attitudes toward lesbians							
Anderssen (men year-two)	2002	-.3859	264	-.56	-.21	-.1900	<.0001
Attitude toward lesbians							
Anderssen (women year-two)	2002	-.6506	317	-.81	-.49	-.3100	<.0001
Attitude toward lesbians							
Anderssen (women year-two)	2002	-.5819	317	-.74	-.42	-.2800	<.0001
Attitude toward lesbians							
Anderssen (men baseline)	2002	-.1803	293	-.34	-.02	-.0900	.0292
Attitudes toward gay men							
Anderssen (men baseline)	2002	-.5151	293	-.68	-.35	-.2500	<.0001
Attitudes toward gay men							
Anderssen (women baseline)	2002	-.4933	322	-.65	-.34	-.2400	<.0001
Attitudes toward gay men							
Anderssen (women baseline)	2002	-.5820	322	-.74	-.42	-.2800	<.0001
Attitudes toward gay men							
Anderssen (men year-two)	2002	-.3233	264	-.49	-.15	-.1600	.0002
Attitudes toward gay men							
Anderssen (men year-two)	2002	-.6272	264	-.80	-.45	-.3000	<.0001
Attitudes toward gay men							
Anderssen (women year-two)	2002	-.5595	317	-.72	-.40	-.2700	<.0001
Attitudes toward gay men							
Anderssen (women year-two)	2002	-.5372	317	-.70	-.38	-.2600	<.0001
Attitudes toward gay men							
Basow and Johnson (numg)	2000	-.6755	71	-1.01	-.34	-.3200	.0001
Basow and Johnson (numl)	2000	-.9800	71	-1.33	-.63	-.4400	<.0001
Berkman and Zinberg (IAH)	1997	-.9256	187	-1.14	-.71	-.4200	<.0001
Berkman and Zinberg (ATL)	1997	-.4945	187	-.70	-.29	-.2400	<.0001
Berkman and Zinberg (ATG)	1997	-.7231	187	-.93	-.51	-.3400	<.0001
Berkman and Zinberg (Hetero)	1997	-.8216	187	-1.03	-.61	-.3800	<.0001
Bowen and Bourgeois	2001	-1.0289	109	-1.31	-.75	-.4600	<.0001
Cotton-Huston and Waite	2000	-.0611	150	-.28	.16	-.0305	.5986
D'Augelli and Rose	1990	-.4082	218	-.59	-.21	-.2000	<.0001
Ellis and Vasseur	1993	-.6087	108	-.88	-.34	-.2912	<.0001
Estrada and Weiss (ATLG)	1999	-.5549	72	-.89	-.22	-.2700	.0010
Estrada and Weiss (ATHM)	1999	-.2622	72	-.59	-.07	-.1300	.1230
Glassner and Owen	1976	-.4857	61	-.84	-.12	-.2360	.009
Gentry	1987	-.2858	96	-.57	-.00	-.1414	.0515
Grack and Richman	1996	-1.437	34	-1.97	-.90	-.5837	<.0001
Haddock, Zanna and Esses	1993	-.8990	151	-1.13	-.66	-.4100	<.0001
Hansen	1982	-1.028	112	-1.42	-.63	-.4571	<.0001

Table 1 (continued).

Author	Year	<i>d</i>	<i>n</i>	CI Lower	CI Upper	<i>r</i>	<i>p</i>
Herek (women/ATL)	1988	-.3870	73	-.71	-.05	-.1900	.0225
Herek (women/ATG)	1988	-.2213	73	-.54	.10	-.1100	.1893
Herek (women/ATG)	1988	-.4944	73	-.82	-.16	-.2400	.0037
Herek (women/ATL)	1988	-.2417	73	-.56	.08	-.1200	.1519
Herek (men/ATG)	1988	-.4726	179	-.68	-.26	-.2300	<.0001
Herek (men/ATG)	1988	-.4944	179	-.70	-.28	-.2400	<.0001
Herek (men/ATL)	1988	-.4726	179	-.68	-.26	-.2300	<.0001
Herek (men/ATL)	1988	-.4295	179	-.63	-.22	-.2100	<.0001
Herek (bi men)	2002	-.2965	1335	-.37	-.22	-.1466	<.0001
Herek (bi women)	2002	-.3130	1335	-.38	-.23	-.1546	<.0001
Herek and Capitanio	1996	-.4736	538	-.59	-.35	-.2304	<.0001
Study 1							
Herek and Capitanio	1996	-.5270	366	-.67	-.37	-.2548	<.0001
Study 2							
Herek and Capitanio	1997	-.3849	594	-.49	-.27	-.1890	<.0001
Herek and Glunt	1993	-.5713	937	-.66	.07	-.2746	<.0001
Hinrichs and Rosenberg (HAS) contact with lesbians	2002	-.8216	692	-.93	-.71	-.3800	<.0001
Hinrichs and Rosenberg (HAS) contact with gay men	2002	-1.0078	692	-1.12	-.90	-.4500	<.0001
Hinrichs and Rosenberg (ATL) contact with lesbians	2002	-.8729	692	-.98	-.76	-.4000	<.0001
Hinrichs and Rosenberg (ATL) contact with gay men	2002	-.8990	692	-1.01	-.79	-.4100	<.0001
Hinrichs and Rosenberg (ATG) contact with lesbians	2002	-.8216	692	-.93	-.71	-.3800	<.0001
Hinrichs and Rosenberg (ATG) contact with gay men	2002	-.9800	692	-1.09	-.87	-.4400	<.0001
Horvath and Ryan	2003	-.3450	236	-.52	-.16	-.1700	.0002
Lance	1987	-.5122	51	-1.11	.09	-.2522	.0873
Lance	1992	-.7039	228	-.97	-.43	-.3320	<.0001
Lance	1994	-.6151	140	-.95	-.27	-.2940	<.001
Liang and Alimo (pre college)	2005	-.9255	401	-1.07	-.77	-.4200	<.0001
Liang and Almo (college)	2005	-.3241	401	-.46	-.18	-.1600	<.0001
Millham et al.	1976	-.1034	795	-.20	-.00	-.0516	.0395
Mohipp and Morry (les)	2004	-.2635	152	-.48	-.03	-.1306	.0228
Mohipp and Morry (gay)	2004	-.2685	152	-.49	-.04	-.1330	.0203
Mohr and Rochlen	1999	-.4691	305	-.62	-.30	-.2283	<.0001
Morin	1974	-.5528	18	-1.21	.11	-.2664	.1273
Pagtolun-An and Clair	1986	-.3548	71	-.68	-.02	-.1746	.0379
Pleck et al.	1988	-.4726	237	-.65	-.29	-.2300	<.0001
Riggle, Ellis and Crawford After viewing film	1996	-.3728	82	-.68	-.06	-.1832	.019
Riggle, Ellis and Crawford contact before viewing film	1996	-.5608	176	-.77	-.34	-.2700	<.001
Sakalli	2002b	-.1226	183	-.32	.08	-.0612	.2440
Sakalli	2002a	-.4945	200	-.69	-.30	-.2400	<.0001
Sakalli and Uğurlu	2002	-.6087	54	-.88	-.33	-.2911	<.001
Sakalli and Uğurlu	2001	-.8068	211	-1.08	-.52	-.37	<.0001

Table 1 (continued).

Author	Year	<i>d</i>	<i>n</i>	CI Lower	CI Upper	<i>r</i>	<i>p</i>
Scarberry et al.	1997	-1.18	33	-1.70	-.65	-.5086	<.0001
Scarberry et al.	1997	-1.914	33	-2.49	-1.33	-.6915	<.0001
Schope and Eliason (atl)	2000	-.6139	129	-.86	-.36	-.2934	<.0001
Schope and Eliason (atg)	2000	-.5033	129	-.75	-.25	-.2440	<.0001
Simon (women)	1995	-1.036	349	-1.19	-.87	-.4600	<.0001
Simon (men)	1995	-1.622	199	-1.84	-1.39	-.6300	<.0001
Simoni (les)	1996	-.3295	181	-.53	-.12	-.1625	.0019
Simoni (gays)	1996	-.4777	181	-.68	-.26	-.2323	<.0001
Weis and Dain	1979	-.4785	100	-.75	-.19	-.2326	<.001
Whitley	1990	-.2061	366	-.35	-.06	-.1025	.005
Whitley (HATH)	1990	-.1904	366	-.33	-.04	-.0948	.010

Note. This table includes effect size estimates from each study for all 83 hypothesis tests that contribute to the overall effect size on the relationship between contact and sexual prejudice. These 83 hypothesis tests were also used to examine the moderators that may influence the relationship between contact and sexual prejudice

effect sizes were included, with only a slight decrease in the overall effect size, $r = -.23$, $p < .001$. Because there was similarity between both effect sizes, the 83 hypothesis tests were used for further analysis.

Sexual Prejudice Measures

Tests were conducted to see if the sexual prejudice measure used moderated the relationship between contact and sexual prejudice. We hypothesized that the type of sexual prejudice measure used in the study would moderate the relationship between contact and sexual prejudice. All of the measures showed a negative relationship between contact and sexual prejudice. Table 3 summarizes these results. Despite the fact that there were a large number of studies that used the ATLG scale ($k = 30$) there were still significant differences depending on which measure was used, $Q(w) = 97.616$, $p < .0001$. The ATLG, $r = -.30$, $p < .0001$, showed the largest relationship between contact and sexual prejudice while researchers who used their own scales or other less frequently used measures to assess sexual prejudice, $r = -.21$, $p < .0001$, had the smallest relationship between contact and sexual prejudice.

Correlational Versus Experimental Studies

Analyses were conducted to see if experimental studies in which heterosexuals' level of sexual prejudice was assessed subsequent to contact with an individual who was homosexual and correlational studies in which the participants completed questionnaires to assess prior contact with homosexuals would have different relationships between contact and sexual prejudice. We expected that correlational studies would show a stronger relationship between contact

and sexual prejudice. Results indicated that correlational studies, $r = -.25$, $p < .0001$, did not show a significantly stronger relationship between contact and sexual prejudice, than did experimental studies, $r = -.26$, $p < .001$, $QB(1) = 4.464$, $p = .832$, even though both were significant and showed negative relationships.

Target Group

Analyses were conducted to assess whether the relationship between contact and sexual prejudice varied as a function of the target group toward whom the prejudice was assessed. We hypothesized that when the target group was lesbian, there would be a stronger relationship between contact and sexual prejudice. Results indicated that the relationship between contact and sexual prejudice differed significantly when the target group was lesbians specifically, gay men specifically and homosexuals in general, $QB(2) = 64.399$, $p < .0001$. As shown in Table 4, the strongest relationship between contact and sexual prejudice was found when studies examined prejudice towards lesbians specifically, but the relationship was significantly negative for all three categories of target group.

Quality of Study and Publication Year

Quality of study was assessed on a 1 (*low*) to 9 (*high*) Likert-type scale. We hypothesized that the relationship between contact and sexual prejudice would be stronger as the quality of the study increased. In regards to publication year, we wanted to evaluate whether publication year would influence the relationship between contact and sexual prejudice. A *z*-test for focused comparisons revealed that quality of study was not a significant moderator, $z = .58$,

Table 2 Stem and leaf plot of effect sizes (r) for the relationship between contact and sexual prejudice.

Stem	Leaf
-1.0	
- .9	
- .8	
- .7	
- .6	3 9
- .5	0 8
- .4	0 1 1 2 2 4 4 5 5 6 6
- .3	0 1 2 3 4 7 8 8 8
- .2	0 1 2 3 3 3 3 3 3 3 4 4 4 4 4 4 5 5 5 5 5 5 6 6 6 6 7 7 7 7 7 7 7 7 8 8 8 8 9 9 9 9 9 9 9 9 9 9
- .1	0 1 2 3 3 3 4 4 5 6 6 6 6 6 6 6 7 7 8 8 8 9 9
- .0	3 5 6 9
. 0	
. 1	
. 2	
. 3	
. 4	
. 5	
. 6	
. 7	
. 8	
. 9	
1.0	

Note. Negative effect sizes mean that as contact increases sexual prejudice decreases

Table 3 Effect size calculations for sexual prejudice measures.

Sexual Prejudice Measure	<i>k</i>	<i>r</i>	<i>p</i>
Attitudes Toward Lesbians and Gay Men	30	-.30 _a	<.0001
Index of Attitudes Toward Homosexuality	11	-.23 _b	<.0001
Homosexuality Attitude Scale	3	-.28 _a	<.0001
Other scales	39	-.21 _b	<.0001

Note. Effect sizes that do not share a subscript are significantly different from each other

$p=.58$, of the relationship between contact and sexual prejudice. This indicates that the relationship between sexual prejudice and contact did not depend on study quality. A *z*-test for focused comparisons revealed that publication year was also not a significant moderator, $z=-1.59$, $p=.11$. This suggests the year in which the study was conducted did not influence the relationship between contact and sexual prejudice.

Where the Study Was Conducted

Analyses were conducted to assess whether the relationship between contact and sexual prejudice would vary as a function of where the study was conducted. We wanted to evaluate whether studies conducted in the United States versus studies conducted outside the United States would moderate the relationship between contact and sexual prejudice. Results indicated that the relationship between contact and sexual prejudice differed significantly when the study was conducted in the United States versus outside the United States, $QB(1)=16.186$, $p<.0001$. A stronger relationship between contact and sexual prejudice was found when studies were conducted within the United States, $r=-.26$, $p<.0001$, versus outside of the United States, $r=-.23$, $p<.0001$. However, the relationship was significantly negative for both categories of where the study was conducted.

Discussion

The purpose of this meta-analysis was to more closely examine the relationship between contact and sexual prejudice. Results across the 41 studies revealed that there was a significant negative relationship between contact and sexual prejudice. This suggests that having contact with lesbians and gay men is associated with reduced sexual prejudice towards homosexuals by heterosexuals. This is consistent with Pettigrew and Tropp's (2006) finding in their previous meta-analysis on the effects of contact on sexual prejudice. Further, tests for homogeneity were significant indicating that there was variability among the

different studies for the relationship between contact and sexual prejudice that was accounted for by moderating variables. Analyses revealed that three of the proposed moderating variables did indeed moderate the relationship between contact and sexual prejudice: the type of sexual prejudice scale used in the study, the target of the attitudes assessed, and where the study was conducted.

The type of scale used to assess sexual prejudice was related to differences in the relationship between contact and sexual prejudice. The ATLG scale showed the strongest relationship between contact and sexual prejudice while the studies that created their own scales or less frequently used scales to measure sexual prejudice showed the weakest relationship. This suggests that the type of measure used to assess sexual prejudice can influence the results of the study when assessing relationships. This may be due to the type of wording used in the different scales or the specific way in which sexual prejudice is operationalized by the different scales. For instance, the ATLG scale measures attitudes toward lesbians and attitudes toward gay men separately (Herek 1984), while the IAH measures attitudes toward gay men and lesbians together as "homosexuals", and does not distinguish between the two (Whitley 1990). However, while there was a difference between the sexual prejudice scales used in the study and the relationship between contact and sexual prejudice, all of the scales showed the same pattern of relationship, and there was a relatively weak difference.

The second variable that moderated the relationship between contact and sexual prejudice was the target group specified in the measurement of sexual prejudice. Analyses revealed that participants had a stronger relationship between contact and sexual prejudice when the target group was lesbians than when the target group was gay men or homosexuals in general. This is potentially related to research findings that have found that generally heterosexuals have more negative attitudes toward gay men (Herek 1991, 1994; Kite and Whitley 1998). It may be that because individuals are generally more positive in their attitudes toward lesbians than toward gay men there may be more flexibility in those attitudes such that interventions (such as contact) would produce more positive attitude

Table 4 Target group.

Attitudes	<i>k</i>	<i>r</i>	<i>p</i>
Lesbians	21	-.30 _a	<.0001
Gay men	21	-.27 _b	<.0001
Homosexuals	41	-.22 _c	<.0001

Note. Negative effect sizes indicate that as contact increased, sexual prejudice decreased. Effect sizes that do not share a subscript are significantly different

change. The higher degree of negativity toward gay men, especially by heterosexual men, may be because society devalues the idea of male homosexuality more than female homosexuality (Morin and Garfinkle 1978). Culture in the U.S. emphasizes that to be heterosexual one must be masculine. Many men may feel the need to reinforce their masculinity by rejecting gay men who violate this norm (Herek 1986, 1988). Whereas women may not feel this same pressure to exert these negative attitudes. Another explanation is that the existence of fear toward homosexuality may be because it is a defense mechanism against an individual's sexual feelings toward someone of the same gender (Adams et al. 1996). Men having to admit that they feel an attraction to a person of the same gender may not be in agreement with their ideas of being heterosexual. Whatever the reason may be it seems that these negative attitudes toward gay men may be slightly more resilient to interventions (like contact), than attitudes toward lesbians.

Where the study was conducted also moderated the relationship between contact and sexual prejudice. Analyses revealed that there was a stronger relationship between contact and sexual prejudice when the studies were conducted in the United States versus when they were conducted outside the United States. These results suggest that there is a need for more cross-cultural research to further examine the relationship between contact and sexual prejudice in different countries.

Whether the study was correlational versus experimental in nature did not significantly moderate the relationship between contact and sexual prejudice. This showed that findings across both experimental and correlational studies are consistent and robust. We hypothesized that correlational studies would show a stronger relationship between contact and prejudice because they are asked to report contact experiences over their lifetimes. These participants may have homosexual family members or even friends. Researchers have found that individuals who have had homosexual friends or know a homosexual personally have more positive attitudes toward homosexuals than those individuals who have never known a homosexual or had homosexual friends (Herek 1988; Herek and Capitano 1996). In addition, the more contact a person has had with homosexuals, the more positive the attitude toward homosexuals (Herek and Capitano 1996). These contact experiences could then lead to more positive attitudes toward their homosexual friends, and in time, generalize these positive feelings toward homosexuals. However, the findings from this meta-analysis suggest that this is not the case because the relationship between contact and sexual prejudice in correlational and experimental studies were not significantly different from each other.

Experimental studies in which heterosexuals' level of sexual prejudice was assessed subsequent to contact with a

homosexual also yielded a significant relationship between contact and sexual prejudice. This suggests that even individuals who may have never had contact with a homosexual before the experimental study still had more positive attitudes after interacting with a homosexual in the study than beforehand. This is consistent with Allport's (1954) contact hypothesis that positive contact with a member of a negatively stereotyped group can lead to more positive attitudes. Thus, the significant relationship between contact and sexual prejudice yielded from the experimental studies suggests that even short interactions with homosexuals can lead to more positive attitudes.

The results from this meta-analysis contribute to the current literature on contact and sexual prejudice by furthering Pettigrew and Tropp's (2006) work in examining moderators that may influence the relationship between contact and sexual prejudice. However, there are some limitations that must be considered. The first limitation is that the specific moderators chosen for this meta-analysis may not have accounted for all the unexplained variance for the overall relationship between contact and sexual prejudice. Other moderators may exist that may help explain this relationship. One of these moderators may be the quality of the contact versus the quantity of the contact. As noted by Pettigrew and Tropp (2006) in their meta-analysis, results in this meta-analysis may be indicative of individuals' having positive contact experiences with homosexuals. Unfortunately, many of the studies examining sexual prejudice used only a single-item measure to assess contact experiences, or even if they did use multiple items they did not separate them in their analyses, so we were not able to evaluate this moderator. However, the quantity versus quality of interactions is something that has been examined in racial prejudice research. Plant and Devine (2003) have found that individuals who have had few positive interactions in the past with outgroup members, have negative expectations about future interracial interactions. These negative expectations about future interactions create anxiety, and this anxiety may lead individuals to avoid future interactions with outgroup members. Conversely, past positive experiences with outgroup members were associated with individuals having less anxiety. Individuals who have less anxiety from past positive experiences then may have more positive expectations regarding future interracial interactions. Given the importance of the quality of interaction in interracial interactions, future research should attempt to understand how the quality of contact versus the quantity of contact experiences influences the relationship between contact and sexual prejudice.

Another moderator may be the sex of the participant having contact with homosexuals. Many of the studies did not separately report heterosexual men's and heterosexual women's attitudes toward lesbians and gay men, thus we

were not able to evaluate this moderator. This is another factor that should be examined in future research.

Another limitation is that some of the levels of the moderator variables that were coded did not occur equally throughout the literature and when the levels were compared unequal sample sizes existed. Probably most importantly, we were unable to find an equal number of studies that assessed contact experimentally and correlationally. Many of the studies were not experimental, interfering with our ability to draw a causal conclusion regarding the relationship between contact and sexual prejudice. Further, some sexual prejudice scales were more widely used than others such as the ATLG. The HAS scale only appeared three times throughout the literature in studies that assess relationship between contact and sexual prejudice, while the ATLG occurred much more frequently both as a combined scale and as two separate scales. Finally, we could not find an equal number of studies that were conducted within the United States and not within the United States. More specifically, only 6 of the 41 studies were conducted outside of the United States while 35 of the studies were all conducted within the United States. Therefore, the conclusions drawn from some of the moderator analyses should be interpreted with some caution.

The current meta-analysis was a first step in extending Pettigrew and Tropp's (2006) work on contact by not only focusing on the relationship between contact and sexual prejudice, but also looking at moderating variables for this relationship. As with Pettigrew and Tropp's (2006) meta-analysis, our overall effect size showed a significant negative relationship. This indicates that those individuals who have had more prior or current contact with homosexuals show more positive attitudes toward homosexuals than those individuals who have had less prior or current contact with homosexuals. This relationship was also moderated by the type of scale used to assess sexual prejudice, heterosexuals attitudes toward lesbians and gay men, and where the study was conducted.

Results regarding the type of sexual prejudice scale used in the study showed that the specific sexual prejudice scale used can influence the relationship that researchers may find between contact and sexual prejudice. This may be due to differences in wording and operational definitions employed by the various measures. However, these differences were relatively weak in nature. Further, it is compelling that when looking at the type of contact assessed, correlational and experimental studies were not significantly different from each other. This suggests that even a limited amount of interaction with a homosexual can result in more positive attitudes. In addition, knowing that experimental studies can also lead to more positive attitudes, future research can focus on creating better

interventions for the reduction of sexual prejudice by increasing intergroup contact. Finally, it is possible that contact maybe effective in producing positive attitude change for homosexuals in general but maybe slightly more effective in changing attitudes regarding lesbians versus gay men. By synthesizing the current literature, this meta-analysis provides further support for the significant relationship between contact and sexual prejudice in general as well as helping to more precisely examine the moderators of this relationship.

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*denotes studies included in the meta-analysis

APPENDIX L

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HEADQUARTERS, AIR FORCE RESERVE COMMAND
ROBINS AIR FORCE BASE, GEORGIA

DECLARATION RE: ADMINISTRATIVE DISCHARGE BOARD FOR
MAJOR MARGARET H. WITT

I, THOMAS M. HANSEN, do hereby declare under penalty of perjury under the laws of the United States of America, that the following facts are true and correct:

1. I am over 18 years of age and I have personal knowledge of the facts set forth in this declaration.
2. I am a Major in the United States Air Force Reserve. I have been in the Air Force for 12 years. I am assigned to the 446th Aeromedical Evacuation Squadron. I have been a member of the 446th for 12 years.
3. I know Major Margaret H. Witt very well. I worked with her for about 10 years. I traveled with her on training flights and overnight missions. I also traveled to and from Air Force Base McChord with her, for weekend reserve duty.
4. I consider Major Witt a very skilled and highly valuable member of the Air Force, and of the 446th AES. She is also a talented leader. To the best of my knowledge, everyone in the 446th AES respects her and considers her a tremendous resource.
5. I was shocked and surprised when I learned that she was being processed for an administrative discharge. I understand that the reason offered for her discharge is that she engaged in homosexual conduct.

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6. During all the years that I worked with Major Witt, I never gave the question of whether she was homosexual or heterosexual any thought. It was simply a non-issue to me. It is completely irrelevant to me. I don't care one way or the other. What I care about is whether someone can do their job. Since I don't care about a person's sexual orientation, I never thought anything at all about Major Witt's sexual orientation.

7. I have discussed the topic of Major Witt's administrative separation with other members of the 446th AES, and they shared my confusion as to why she was being separated, and how the matter came up. No one that I knew of in the 446th had had any problem with her. It is our understanding that the matter was referred to the 446th Commander from someone outside the 446th, and apparently from someone outside Air Force Base McChord.

8. From my perspective, since the military has a "Don't Ask, Don't Tell," policy when it comes to homosexuality, it is difficult to understand why Major Witt has been separated from the unit and is being processed for discharge. To my knowledge she never told anyone what her sexual orientation was. To my knowledge no one in the unit asked her, and so far as I am aware, no one in the unit cares.

9. During all the time that I traveled with Major Witt, she never told me anything about her personal life, and I never asked her anything about it. At all times she has been strictly professional, and kept her private life to herself. Therefore, I personally see it as unfair that she should be discharged for something that is irrelevant and that has absolutely no effect on her exceptionally high level of professional service to her country.

10. In July of this year I served as the Rater and completed an Officer Performance Report for Major Witt. A copy of that OPR is attached to this declaration. This OPR includes the period of time leading up to her separation from the unit in November of 2004.

11. Major Witt is very highly regarded within the 446th. As stated in my comments in that OPR, she was selected by the Commander to be Chief of Standards and Evaluation "due to her extensive knowledge of mission flying regulations and her ability to manage and motivate squadron members to their highest level."

12. I understand that the Air Force regulations requiring discharge of service members who engage in homosexual conduct are based on the assumption that the presence of a known homosexual within a unit will cause morale or discipline problems within that unit. But that rationale has no application in this case. It seems absurd to contend that she has to be discharged when to my knowledge everyone in the unit recognizes that her presence in the unit is good for unit morale.

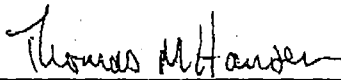
13. As I said in the OPR, Major Witt was "often sought out by squadron members for her depth of knowledge" and her "people management skills are valued by all." In the section for "Overall Assessment" I noted that Major Witt is a dynamic leader "recognized by peers for strong character, leadership skills and knowledge base"; that she is "committed to continuing squadron cohesion and morale"; that she is an "Excellent role model of professional military officership"; that she "sets the standard for professional conduct by junior officers and fellow peers to emulate for career success"; and that she is a "remarkable leader -- exceeds expectations, achieves the unexpected and seeks out the

best in other members." I concluded that she has a "passion for excellence" and is an officer of "unquestionable integrity, leadership and professionalism.

14. I cannot understand why the Air Force would want to discharge such an outstanding officer. We are currently fighting a war. We have a great need for flight nurses in Aeromedical Evacuation Squadrons. At this time when we have a shortage of Air Force flight nurses, and are recruiting people to fill those vacancies, it makes no sense to me that Major Witt cannot continue to serve, knowing as we do that she has an outstanding military service record and has served her country well for almost 20 years.

15. To my knowledge, if Major Witt were retained in the Air Force, people in the 446th AES would be very happy and would welcome her back with much enthusiasm. I hope the Discharge Board will agree that it makes no sense to discharge her. We need people like Major Witt in the Air Force. If we could only fill all of our vacancies for flight nurses with professionals like Major Witt, that would be of great benefit to the country.

DATED this 22nd day of September 2006.



Major Thomas M. Hansen, USAFR
446th Aeromedical Evacuation Squadron
McChord Air Force Base, WA